

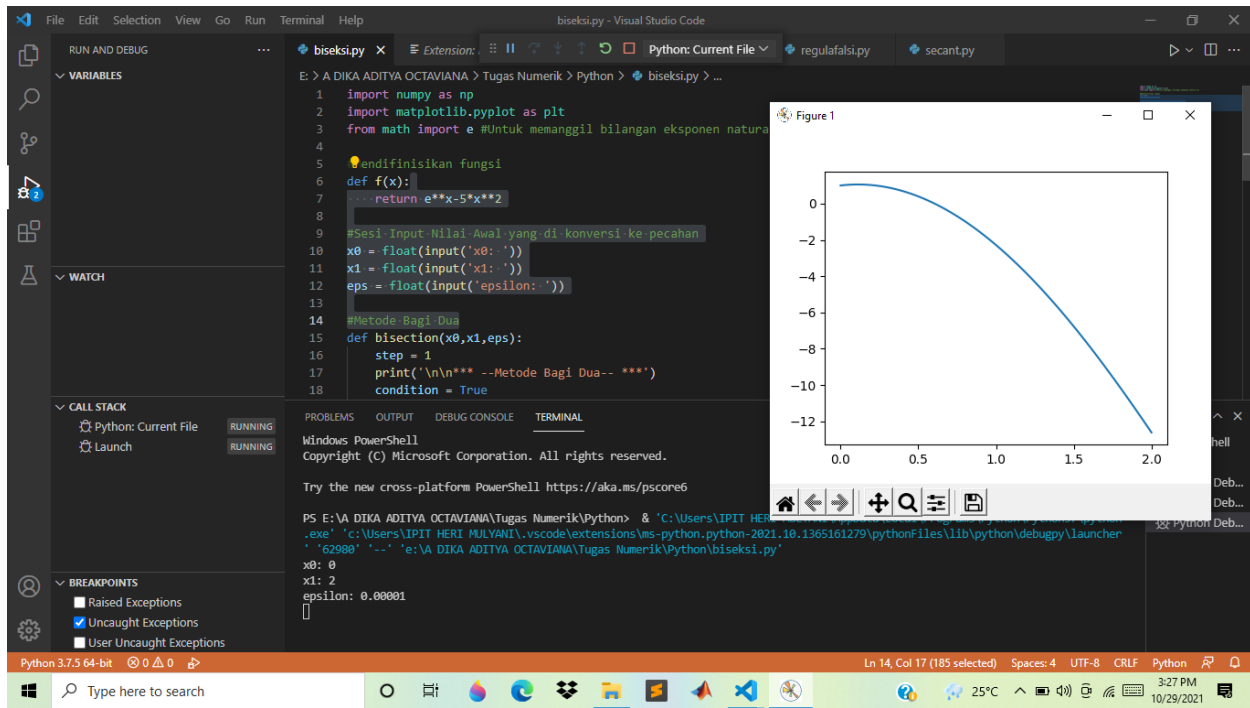
DIKA ADITYA OCTAVIANA

202010225233

TF3A6

Tugas Praktikum 1 modul 1

A. Script metode bagi dua



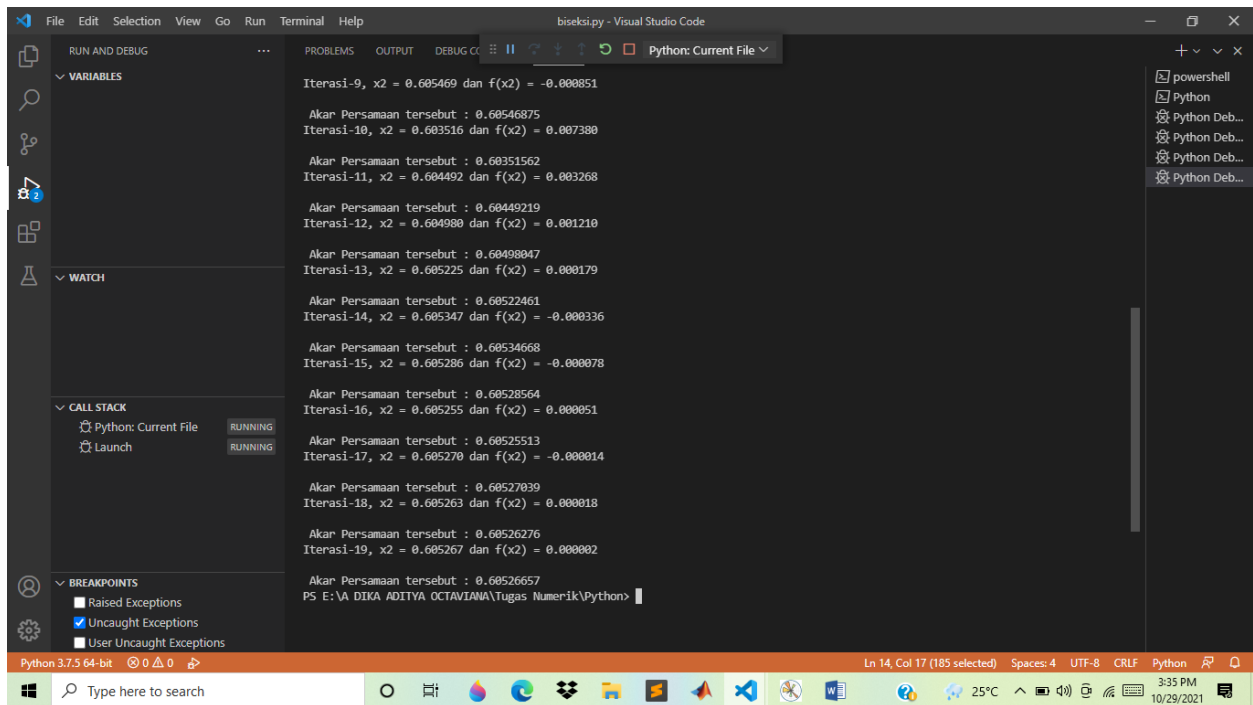
The screenshot displays the Visual Studio Code interface with a Python script named `biseksi.py` open. The script implements the bisection method for finding roots of a function $f(x) = e^x - 5x^2$. The code includes imports for `numpy` and `matplotlib.pyplot`, and uses `input()` for user-defined initial values `x0` and `x1`, and a tolerance `epsilon`. The `bisection` function is defined with a `step` parameter and a `condition` flag. The terminal shows the execution of the script, displaying the input values and the result of the bisection method.

```
1 import numpy as np
2 import matplotlib.pyplot as plt
3 from math import e #Untuk memanggil bilangan eksponen natura
4
5 #endefinisikan fungsi
6 def f(x):
7     return e**x-5*x**2
8
9 #Sesi Input Nilai Awal yang di konversi ke pecahan
10 x0 = float(input('x0: '))
11 x1 = float(input('x1: '))
12 eps = float(input('epsilon: '))
13
14 #Metode Bagi Dua
15 def bisection(x0,x1,eps):
16     step = 1
17     print('\n\n*** --Metode Bagi Dua-- ***')
18     condition = True
```

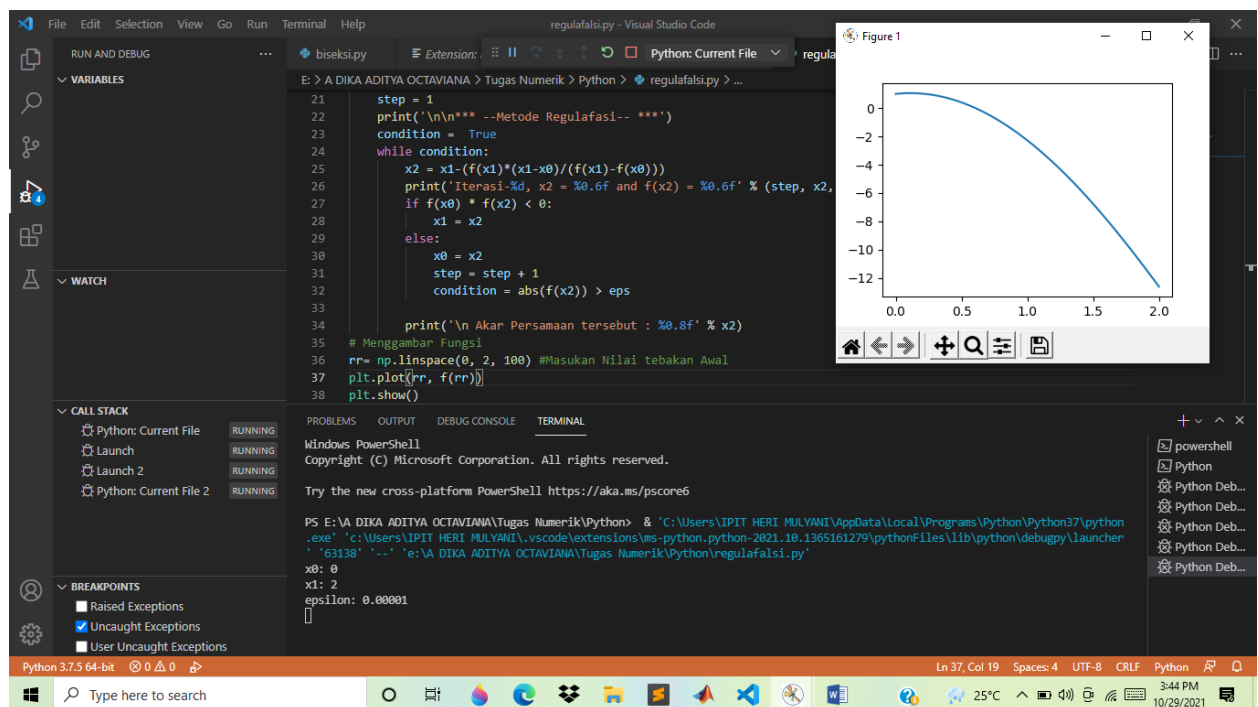
The terminal output shows the execution of the script, displaying the input values and the result of the bisection method:

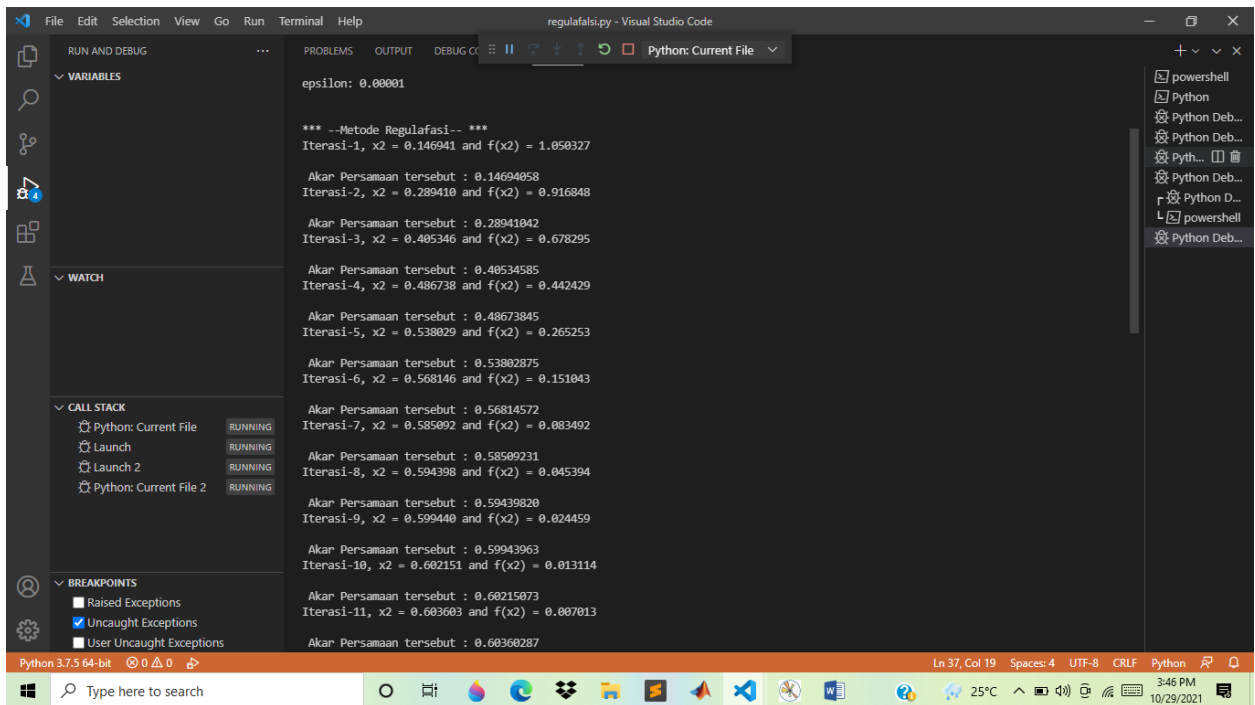
```
PS E:\VA DIKA ADITYA OCTAVIANA\Tugas Numerik\Python> & 'C:\Users\IPIT HERI MULYANI\vscode\extensions\ms-python.python-2021.10.1365161279\pythonFiles\lib\python\debugpy\launcher'
'62980' '--' 'e:\VA DIKA ADITYA OCTAVIANA\Tugas Numerik\Python\biseksi.py'
x0: 0
x1: 2
epsilon: 0.00001
```

A plot titled "Figure 1" is shown, displaying the function $f(x) = e^x - 5x^2$ over the interval $x \in [0, 2]$. The curve starts at $(0, 1)$ and decreases, crossing the x-axis at approximately $x = 0.46$ and $x = 1.96$, indicating the roots of the function.

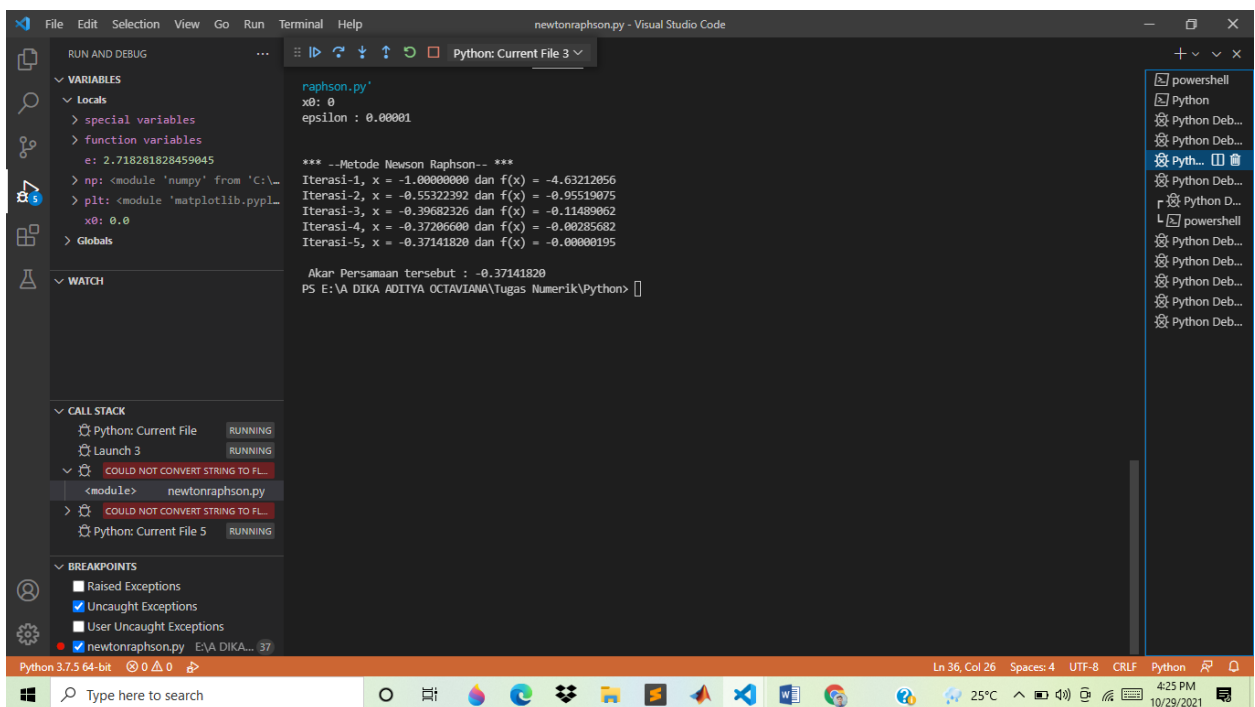


B. Regulasfalsi





C. Newstoraphson



D. Secant

```
E:\A DIKA ADITYA OCTAVIANA > Tugas Numerik > Python > secant.py > ...
1 # Dika.aditya.octaviana.202010225233.TF3A6
2 import numpy as np
3 import matplotlib.pyplot as plt
4 from math import e #untuk memanggil bilangan eksponen natural (e)
5
6 #Mendefinisikan fungsi
7 def f(x):
8     return e**x-5*x**2
9
10 #Metode Secant
11 def Secant(x0,x1,eps, N):
12     step = 1
13     condition = True
14     while condition:
15         if f(x0) == f(x1):
16             print ('Solusi tidak di temukan')
17             break
18
```

Max Iter: 100
epsilon: 0.00001
Iterasi-1, x = 0.14694058 dan f(x) = 1.05032747
Iterasi-2, x = 0.28941042 dan f(x) = 0.91684783
Iterasi-3, x = 1.26801036 dan f(x) = -4.48547660
Iterasi-4, x = 0.45549212 dan f(x) = 0.53958387
Iterasi-5, x = 0.54273918 dan f(x) = 0.24788466
Iterasi-6, x = 0.61688134 dan f(x) = -0.04957321
Iterasi-7, x = 0.60452588 dan f(x) = 0.00312984
Iterasi-8, x = 0.60525888 dan f(x) = 0.00003480
Iterasi-9, x = 0.60526713 dan f(x) = -0.00000003

Akar Persamaan tersebut : 0.60526713
PS E:\A DIKA ADITYA OCTAVIANA\Tugas Numerik\Python >